

REMARKS

Claims 18-39 were pending in the present application. By this Amendment, Applicant has amended claims 18, 20, 22, 26 - 33. Applicant has also canceled claim 19. The Examiner has withdrawn claims 26-39. Finally, Applicant has added new claim 40. The present Amendment does not introduce any new matter and, thus, its entry is respectfully requested. Upon entry of the present Amendment, claims 18, 20-25 and 40 will be pending and under examination.

The October 30, 2007 Office Action

According to the October 30, 2007 non-final Office Action, the Examiner acknowledged the provisional election made by Robert Murray on October 9, 2007. In response, Applicant hereby affirms the election with traverse of Group I, product claims 18-25. Applicant respectfully submits that the execution of the process of claims 26-39 of Group II are the only way of fabricating the multilayered particle wiring board products of Group I. Accordingly, reconsideration and withdrawal of the Restriction between Groups I and II is believed in order and is requested.

Group II, claims 26-39, which encompass the method for manufacturing a multilayered printed wiring board, are presently withdrawn from the application. Applicant has amended Group II, claims 26-39 in accordance with the amendments made to the elected claims. Applicant respectfully submits that the amended Group II claims should be rejoined on allowance of the elected claims.

With respect to the claim objection to claim 22, Applicant has amended the term "micron m" to recite " μm ." Applicant respectfully requests that the objection to claim 22 be removed in light of this amendment. Additionally, Applicant has amended the claim the terms "micron m" to recite " μm " in withdrawn claims 26-31.

Examiner's rejections under 35 U.S.C. §112, second paragraph for indefiniteness.

With regard to the rejections of claims 18-20 under 35 U.S.C. § 112, second paragraph, the Examiner is of the opinion that these claims are "structurally indefinite, as it is unclear the positional relationship between the" printed wiring board layers. See p. 3 of the outstanding Office Action. The Examiner, furthermore, argues that it is unclear as to which "surface layer" claim 19 refers to.

While not acquiescing to the propriety of the Office's reasoning, Applicant has obviated the rejection by canceling claim 19. Applicant, additionally, has amended claims 18 and 20 in accordance with the Specification, which discloses where each printed wiring board layer is located with respect to the other layers. See, e.g., fig. 1, p. 10, 4th full para. and p. 11, last line to p. 12, first para. of the Specification. Applicant has amended claim 18 to specify that the "plating of tin, nickel or . . . alloy" is "on the surface of said inner layer circuit facing the primer resin layer" and not on the surface of said inner layer circuit opposite the primer resin layer. Applicant has, additionally, amended claim 20 to clarify that the "silane coupling agent layer" is between the "primer resin layer" and the "plating of tin, nickel or . . . alloy" layer. Applicant respectfully

submits that rejections to claims 18-20 be removed in light of the amendment to claims 18 and 20.

Examiner's rejections under 35 U.S.C. § 102(b)/103(a)

With regard to the rejections of claims 18, 23-25 under 35 U.S.C. § 102(b), or in the alternative, under 35 U.S.C. § 103(a), the Examiner cites Satoh et al. for the disclosure of a resin composition for use in copper clad laminates. See pp. 3-4 of the outstanding Office Action.

While not acquiescing to the propriety of the Office's reasoning, Applicant has obviated the rejections by introducing language regarding the metal plate layer into claim 18. Satoh et al. does not disclose or suggest a plating of tin, nickel or an alloy of these metals on the surface of an inner layer circuit facing the primer resin layer. Applicant respectfully submit that the objection to claims 18, 23-25 be removed in light of the amendment to claim 18.

Examiner's rejections under 35 U.S.C. § 103(a)

With regard to the rejections of claims 18-22 under 35 U.S.C. § 103(a), as set forth on pp. 4-5 of the Office Action, the Examiner is of the opinion that Satoh et al. in combination with JP 2001284821 renders the present invention obvious. As the Examiner acknowledges, however, Satoh et al. does not teach a silane coupling agent layer between the circuit layer and the resin. See top of p. 5 of the outstanding Office

Action. For teachings of the silane coupling agent, the Examiner relies on JP 2001284821 which discloses in [0017] that “a coupling agent” . . . “such as a silane system coupling agent” . . . “is used as an ingredient of a primer layer.” The Examiner also cites [0004] & [0005] for the contention that it is conventional to “place a silane coupling agent between the epoxy resin insulating layers.”

Applicant respectfully disagrees. Unlike JP 2001284821, the present application teaches the advantages of excluding the silane coupling agent as an ingredient of the primer resin layer. The present Specification teaches that the:

[S]ilane coupling agent layer . . . between the inner layer circuit Ci and the primer resin layer P can ensure acceptable and stable adhesion between a[n] insulating resin layer and the inner layer circuit. The silane coupling agent acts as an auxiliary agent for improving the wet-ability of the inner layer circuit surface with the primer resin to improve the adhesion.

(amended.). See p. 11, last line to 12, 1st para. On the other hand, JP 2001284821 provides no suggestion to the skilled artisan that he/she could take advantage of any silane coupling agent characteristic, e.g., surface wetting, that would lead to applying the layer in the fashion described in the present application. In other words, while it may have been conventional to “place a silane coupling agent between the epoxy resin insulating layers[,]” JP 2001284821 shows that it was not conventional to exclude the silane coupling agent as an ingredient of the primer resin layer.

There is no disclosure, furthermore, in JP 2001284821 regarding the beneficial aspects of including a “plating of tin, nickel or . . . alloy” layer. The Examiner, without

citing any reference, takes “the position that it is obvious that such plating reinforces the conductivity and stability of the inner circuit layer.”

To the contrary, one of ordinary skill in the art would not include such plating if his/her aim was to improve adhesion between layers of a multilayered printed wiring board. It is obvious to the skilled artisan that a plating of tin, nickel or an alloy of these metals alone confers no adhesive properties. The Applicant, however, has found that the plating of these metals enhances the adhesion between and around the inner layer circuit and the primer resin layer. See p. 10, 4th full para. of Specification. The effect is further enhanced with use of silane coupling agents. Id. p.12, last sentence of 1st para. Consequently, this synergistic effect was not foreseeable from the state of the art because it was well known that these metals and alloys lack the capability to promote adhesion alone.

Lastly, the Examiner cites JP 2001284821 for the teaching that the surface roughness of the inner layer circuit is 100 – 400,000 μm . See p. 5, 2nd para. of outstanding Office Action.

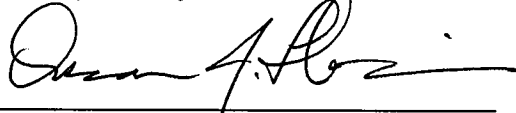
While not acquiescing to the propriety of the Office’s reasoning, Applicant has obviated the rejection by introducing new dependent claim 40, which specifies that the the inner layer circuit surface facing the primer resin layer has a roughness of 2 μm . The present Specification indicates that it is preferable to have the surface roughness of the inner layer circuit up to 2 μm and the shiny side may be up to 1.8 μm . See p. 10, first full para. Contrary to the Examiner’s contention, there would be no reasonable

expectation of success if one of ordinary skill in the art were to combine the silane coupling agents of JP 2001284821 to adhere an inner circuit layer, with a surface roughness less than or equal to 2 μm , to a primer resin layer. This necessarily follows because JP 2001284821 teaches away from the present invention -- the preferred surface roughness disclosed in JP 2001284821 is 400 – 250,000 μm . See [0015]. For all of the foregoing reasons, Applicant respectfully request reconsideration and withdrawal of the obviousness rejections under 35 U.S.C. § 103(a) and submit that the rejection is improper and should be withdrawn.

In view of the above amendments and remarks hereto, Applicant believes that all of the Examiner's rejections set forth in the October 30, 2007 Office Action have been fully overcome and that the present claims fully satisfy the patent statutes. Applicant therefore believes that the application is in condition for allowance. The Director is authorized to charge any fees or overpayment to Deposit Account No. 02-2135.

The Examiner is invited to telephone the undersigned if it is deemed to expedite allowance of the application.

Respectfully submitted,



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